

SECTION 450

TRAFFIC SIGNS AND SIGN STRUCTURES

450.1 GENERAL: This work shall consist of furnishing and installing traffic signs and sign structures in compliance with the specifications and details shown on the plans at the locations shown on the plans, or as established by the ENGINEER.

450.2 REFERENCES

- 450.2.1 Aluminum Association Standards, Latest Edition
- 450.2.2 American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications, Latest Edition
- M120 Zinc (ASTM B6)
- 450.2.3 American Society for Testing and Materials (ASTM) Standard Specifications, Latest Edition
- A123 Zinc (Hot Galvanized) on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strips
- A525 Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
- B209 Aluminum and Aluminum-Alloy Sheet & Plate
- B545 Electrodeposited Coatings of Tin
- E97 Directional Reflectance of Opaque Specimens by Fiber Photometry
- 450.2.4 Federal Highway Administration (FHWA) Standards, Latest Edition
- Highway Signs Color Specifications
- 450.2.5 Government Services Administration (GSA) Standards, Latest Edition
- 450.2.6 Manual on Uniform Traffic Control Devices (MUTCD), Latest Edition
- 450.2.7 This Publication, Latest Edition
- 450.2.8 United States Standards, Latest Edition
- Product Standard for Construction and Industrial Plywood
- 450.3 MATERIALS.

450.3.1 GENERAL: Materials shall be manufactured in conformity with the requirement of GSA L-S-300C and ASTM Standards.

450.3.2 RETROREFLECTIVE SHEETING.

450.3.2.1 The CONTRACTOR shall provide certification that retroreflective sheeting complies with the requirements of GSA L-S-300C. Retroreflective sheeting shall consist of a smooth, flat exterior film with retroreflective elements having a uniform homogeneous appearance. The sheeting shall be weather resistant and shall have a protected pre-coated adhesive backing.

450.3.2.2 COLORS

450.3.2.2.1 The diffuse day color of the retroreflective sheeting shall conform to the requirements of Table I of GSA L-S-300C and shall be determined in accordance with ASTM E 97 Standard Method of Test for 45-Deg., 0-Deg. Directional Reflectance of Opaque Specimens by Filter Photometry. (Geometric characteristics must be confined to illumination incident with 10° of, and centered about, a direction of 45° from the perpendicular to the test surface; viewing is within 15° of and centered about the perpendicular to the test surface. Conditions of illumination and observation must not be interchanged.) The standards to be used for reference shall be the Musnell Papers designated in Table 1. Papers shall have been recently calibrated on a spectrophotometer.

450.3.2.2.2 The test instrument shall be one of the following:

1. Advanced retrotechnology Model G920.
2. Gardner Multipurpose Reflectometer or Model XL20 and XL23 color and color difference meter

450.3.2.2.3 Colors shall be matched visually and shall be within the limits shown on the Color Tolerance Charts issued by the Federal Highway Administration, Office of Traffic Operations. The CONTRACTOR shall provide certification that the diffuse day color of the reflective sheeting will conform to the requirements of GSA L-S-300C, Table I, determined in accordance with the requirements of ASTM E 97.

450.3.2.2.4 If a dispute arises about the results of instrumental testing using diffuse lighting and unidirectional

viewing, acceptance of the material will be based on the results of the visual test using the appropriate color tolerance chart. Daytime color and nighttime color shall conform to the Standard Highway Signs Color Specification issued by FHWA.

450.3.2.3 SPECIFIC INTENSITY

450.3.2.3.1 The sign faces shall have the minimum specific intensity per unit area (SIA) values at 0.2° and 0.5° observation (divergence) angles expressed as average candlepower per footcandle per square foot (candles per lux per square meter) of material as shown in Tables 1, 2, 3, 4, 5, and 6. Measurements shall be conducted in accordance with photoelectric testing procedures for reflective sheeting as provided in paragraph 4.4.7 of GSA L-S-300C and paragraph 441.02(a) of FHWA Specification FP-85.

450.3.2.3.2 Measurements shall be made with the entrance (incidence) and observation angles positioned in the same place.

TABLE 1
Type II Sheeting (Enclosed Lens)

MINIMUM REFLECTIVITY (Average Candlepower Per Footcandle Per Square Foot)								
OA	EA	Wht	Or	Yel	Red	Grn	Blu	Brn
0.2	-4	70. 0	25. 0	50. 0	14. 5	9.0	4.0	1.0
0.2	30	30. 0	7.0	22. 0	6.0	3.5	1.7	0.3
0.5	-4	30. 0	13. 5	25. 0	7.5	4.5	2.0	0.3
0.5	30	15. 0	4.0	13. 0	3.0	2.2	0.8	0.2

Where OA = Observation Angle in Degrees
EA = Entrance Angle in Degrees
Wht = White Or = Orange Yel = Yellow
Grn = Green Blu = Blue Brn = Brown

TABLE 2
Type II-A Sheeting (Enclosed Lens)

MINIMUM REFLECTIVITY (Average Candlepower Per Footcandle Per Square Foot)								
OA	EA	Wht	Or	Yel	Red	Grn	Blu	Brn
0.2	-4	140 .	60. 0	100 .	30. 0	30. 0	10. 0	5.0
0.2	30	60. 0	22. 0	36. 0	12. 0	10. 0	4.0	2.0
0.5	-4	50. 0	20. 0	33. 0	10. 0	9.0	3.0	2.0
0.5	30	28. 0	12. 0	20. 0	6.0	6.0	2.0	1.0

Where OA = Observation Angle in Degrees
EA = Entrance Angle in Degrees
Wht = White Or = Orange Yel = Yellow
Grn = Green Blu = Blue Brn = Brown

TABLE 3
Type III Sheeting (Encapsulated Lens)

MINIMUM REFLECTIVITY (Average Candlepower Per Footcandle Per Square Foot)								
OA	EA	Wht	Or	Yel	Red	Grn	Blu	Brn
0.2	-4	250	100	170	45	45	20	12
0.2	30	150	60	100	25	25	11	8.5
0.5	-4	95	30	62	15	15	7.5	5
0.5	30	65	25	45	10	10	5	3.5

Where OA = Observation Angle in Degrees
EA = Entrance Angle in Degrees
Wht = White Or = Orange Yel = Yellow
Grn = Green Blu = Blue Brn = Brown

450.3.2.4 RETROREFLECTIVE SHEETING
ADHESIVE: Retroreflective sheeting shall include a pre-coated pressure sensitive adhesive (GSA L-S-300C, Class I) or a tack free, heat activated adhesive (GSA L-S-300C, Class II), either of which can be applied without necessity of additional adhesive coats on the sheeting or application surface. The protective liner attached to the adhesive backing shall be removable by peeling without soaking in water or other solvent and shall be easily removed after accelerated storage for four (4) hours at 150 degrees F under weight of 2.5 pounds per square inch. During removal, the liner shall not break, tear, nor adhesive be removed.

450.3.2.5 RETROREFLECTIVE SHEETING DURABILITY AND WORKMANSHIP

450.3.2.5.1 Retroreflective sheeting shall have sufficient strength and flexibility to be handled, processed, and applied according to the recommendations of the sheeting manufacturer without appreciable stretching. When processed and applied in accordance with recommended procedures, retroreflective material shall be weather resistant and following cleaning shall show no appreciable discoloration, cracking, crazing, blistering, or dimensional change. Retroreflective material, when exposed to normal traffic and weather, shall not support fungus growth or accumulate dirt to the extent that the retroreflective brightness before cleaning is less than 75 percent of the retroreflective brightness after cleaning, when measured at 0.2° divergence and -4° incidence. The sheeting surface shall be readily refurbished by cleaning and clear overcoating in accordance with the manufacturer's recommendations.

450.3.2.5.2 Retroreflective sheeting shall be applied to properly treated substrate as recommended by the sheeting manufacturer. Paints and sealers shall be dry before succeeding coats are applied and before packaging. Finished signs shall show careful workmanship and have a smooth and uniform surface. All letters and numbers shall be clean-cut and sharp.

450.3.2.5.3 The sheeting surface of Type II and Type II-A sheeting shall be solvent resistant to gasoline, VM&P naphtha, mineral spirits, turpentine and methanol.

450.3.2.5.4 The sheeting surface of Type III A, B, C and Type IV, sheeting shall be solvent resistant such that it can be cleaned with a soft, clean cloth dampened with VM&P naphtha or mineral spirits.

450.3.2.6 RETROREFLECTIVE SHEETING DELIVERY AND HANDLING: Retroreflective sheeting shall be delivered in good condition and shall have a good appearance, free from ragged edges, cracks, and extraneous materials. When retroreflective sheeting is furnished in continuous rolls, splices shall be smooth with no discernible line of demarcation, and the sheeting shall be suitable for continuous application. Retroreflective sheeting shall be packaged so that no damage or defacement can occur during shipment or storage. Sheeting shall be used within the time frame recommended by the manufacturer.

450.3.2.7 MULTIPLE PIECES OF SIGN SHEETING: Sign faces comprising two (2) or more pieces or panels of retroreflective sheeting shall match in color and provide uniform appearance and brilliance by day and night. The

entire face of each sign panel shall be covered with one (1) unspliced sheet of retroreflective sheeting, except that splicing is permissible where the substrate panel exceeds 48 inches in vertical dimension. No vertical splicing of sheeting shall be used. Materials shall be color-matched and the top piece shall overlap the bottom by a minimum of ½ inch in order to eliminate water penetration.

450.3.2.8 SCREENING INKS AND PROCESS PASTE

450.3.2.8.1 Unless otherwise prohibited, screening inks, process pastes or film overlays can be used, in lieu of manufactured colors at the option of the sign manufacturer, to produce both the legend and background. Only the film overlays or screened colors of green, blue, red, brown and black may be used. Only those screening inks, process pastes or film overlays recommended by the retroreflective sheeting manufacturer shall be used. Said recommendations shall be obtained in writing and a copy filed in accordance with the requirements of this Section 450.

450.3.2.8.1.1 OUTDOOR WEATHERABILITY: The outdoor weatherability of the applied screening inks, process paste or film overlay shall be comparable to the outdoor durability of the retroreflective sheeting.

450.3.2.8.1.2 ADHERENCE: No screening inks, process pastes or film overlay shall be removed when tested by applying cellophane tape over a properly cured, color processed area and removing the tape with one quick motion. The tape shall be 3/4 inch wide 3M Company Scotch Brand Cellophane Tape No. 600, or approved equal.

450.3.2.8.1.3 SOLVENT RESISTANCE: After proper curing, screened sign faces shall be solvent resistant to cleaning solvents recommended by the manufacturer of the retroreflective sheeting and the screening inks, process pastes, and film overlay.

450.3.2.8.1.4 VANDAL RESISTANCE: Screened sign faces shall be resistant to aromatic type solvents. The process and materials used shall be as recommended by the manufacturers of the retroreflective sheeting, screening inks, process pastes, and film overlay in order to facilitate the removal of paints or other oil based matter sprayed or painted on signs.

450.3.2.8.1.5 COLOR: The color of the screened sign faces surface as specified shall meet all applicable requirements and shall conform to the Standard Highway Signs Color Specification issued by the FHWA.

450.3.2.8.1.6 RETROREFLECTIVE INTENSITY (Transparent Colors)

450.3.2.8.1.6.1 Transparent colored inks or transparent colored film overlays shall be processed and applied in accordance with the recommendations of the sheeting manufacturer.

450.3.2.8.1.6.2 The minimum retroreflective intensity value of the transparent color area processed on white sheeting shall be not less than those specified below in Table 7, 8, 9, 10, 11 and 12 for each color at 0.2 degrees observation and -4 degrees entrance angles, expressed in candelas per footcandle per square foot of processed area.

450.3.2.8.1.7 PROCESS COLORS ON SHEETING.

TABLE 4
Type II Retroreflective Intensity

Process Color on Type II Enclosed Lens Sheeting
(White Reflective Sheeting Per Retroreflective Intensity Value)

(Candelas Per Footcandle Per Square Foot)

RED	BLUE	GREEN
10	3	6

TABLE 5
Type II Retroreflective Intensity

Process Color on Type II-A Enclosed Lens Sheeting
(White Reflective Sheeting Per Retroreflective Intensity Value)

(Candelas Per Footcandle Per Square Foot)

RED	BLUE	GREEN
21	7	21

TABLE 6
Type III-A Retroreflective Intensity

Process Color on Type III-A Enclosed Lens Sheeting
(White Reflective Sheeting Per Retroreflective Intensity Value)

(Candelas Per Footcandle Per Square Foot)

RED	BLUE	GREEN
31.5	14	31.5

TABLE 7
Type III-B Retroreflective Intensity

Process Color on Type III-B Enclosed Lens Sheeting
(White Reflective Sheeting Per Retroreflective Intensity Value)

(Candelas Per Footcandle Per Square Foot)

RED	BLUE	GREEN
31.5	14	31.5

TABLE 8
Type III-C Retroreflective Intensity

Process Color on Type III-C Enclosed Lens Sheeting
(White Reflective Sheeting Per Retroreflective Intensity Value)

(Candelas Per Footcandle Per Square Foot)

RED	BLUE	GREEN
24.5	14	24.5

TABLE 9
Type IV Retroreflective Intensity

Process Color on Type IV Enclosed Lens Sheeting
(White Reflective Sheeting Per Retroreflective Intensity Value)

(Candelas Per Footcandle Per Square Foot)

RED	BLUE	GREEN
24.5	14	24.5

TABLE 10

Min. Color Contrast Ratios of Fully Reflectorized Sign
(For Information Only)

Sheeting Type	White/ Red	White/ Green	White/ Blue	White/ Brown
II	5:1	8:1	17:1	70:1
IIA	5:1	5:1	14:1	25:1
III	6:1	6:1	13:1	18:1

450.3.3 SIGN LEGENDS AND SHEETING.

450.3.3.1 The word "legend" used herein and on the plans indicates all letters, numerals, symbols, arrows,

borders, or other accessories that contain and convey the sign message and shall be either a sign sheeting with integral, semi-rigid, 0.005 inch minimum thickness aluminum backing, or sign sheeting applied to a demountable 0.030 inch minimum thickness 6061-T6 or 5052-H38 aluminum alloy; or approved self-adhering machine cut sheeting. Retroreflective sheeting for legends including letters, numerals, symbols, borders and route markers, shall be white as specified in Table 3 of this Section 450. Legends shall conform with the details shown on the plans and the provisions of MUTCD. Color, reflectorization, and configuration of legends shall be as shown on the plans and herein provided:

450.3.3.1.1 PLYWOOD AND ALUMINUM SIGNS: The legend may be a sign sheeting with integral, semi-rigid 0.005 inch and minimum thickness aluminum backing; or sign sheeting applied to demountable 0.030 inch minimum thickness 6061-T6 or 5052-H38 aluminum alloy; or approved self adhering; machine cut sheeting as specified in Table 3 of this Section 450; or reverse screened using a weatherproof screen process enamel that is compatible with the background and that will provide the designated colors and reflectorization of the sign; or reverse film overlaid with an approved film overlay. These legends shall be applied edge sealed, reverse screened, clear coated, and finished as applicable, as recommended by the manufacturer of the retroreflective sheeting.

450.2.4 SIGN BACKGROUNDS

450.3.4.1 Color and configuration of sign backgrounds shall be as shown on the plans. The sign face shall provide a plane surface free from warps, dents, burrs, mars, or other defects resulting from fabrication, shipment, storage, or installation. The entire sign face may be rejected because of any of these defects or because of dirty, marred, or defective background or legend. Completed sign faces mounted in place will be inspected at night.

450.3.4.1.1 Plywood and aluminum signs shall be surfaced with Type II sheeting as specified in Table 1 of this Section 450.

450.2.5 PLYWOOD PANEL SIGNS

450.3.5.1 Plywood shall be classed as group 1, 5/8 inch thick, 5 ply, grade B-B or better, high density overlay on both sides, exterior type plywood conforming to the requirements of the current U.S. Product Standard for Construction and Industrial Plywood marked with a trademark by an approved testing agency, or Canadian Standards Association, bearing legible grade marking of the American Plywood Association or the Canadian Council of

Forest Industries.

450.3.5.1.1 Edges shall be finished to produce a smooth surface without holes. All edges and corners of the sign panels shall be rounded to eliminate edge sharpness and chipping. All edges shall receive two thick coats of exterior type, polysilicone alkyd resin base enamel paint or one thick coat of ready-mixed polysilicone alkyd resin primer followed by one thick coat of polysilicone alkyd resin base enamel. The paint must be thick enough so the individual plys are not visible. The first coat of paint or primer shall be either white or yellow and the second coat shall be either brown or black.

450.3.5.1.2 All painting shall be completed before the retroreflective sheeting is placed.

450.3.5.1.3 The plywood sign blank shall be prepared for retroreflective sheeting as specified by the facing material manufacturer. Retroreflective sheeting, legend and clear coat, shall be applied in accordance with manufacturer's recommendations, this Section 450. Hardware for mounting plywood panel signs shall comply with the requirements of this Section 450.

450.2.6 ALUMINUM PANEL SIGNS.

450.2.6.1 Aluminum panel signs under 24 inches in width shall be 0.080-inch minimum thickness 6061-T6 or 6062-H38 aluminum alloy. Aluminum panel signs 24 inches and over in width shall be 0.125-inch minimum thickness 6061-T6 or 5052-H38 aluminum alloy. All aluminum alloys shall conform to the requirements of ASTM B 209 and shall be supplied as flat stock material. All aluminum panel signs shall have smooth edges and corners.

450.3.6.2 The aluminum sign blank shall be prepared for retroreflective sheeting as specified by the facing material manufacturer. Retroreflective sheeting, legend, and clear coat, shall be applied in accordance with manufacturer's recommendations, this Section 450 Retroreflective Sheeting and this Section 450 Sign Legends and Sheeting. A copy of the manufacturers recommendations shall be kept on file as specified in this Section 450 for review by the ENGINEER during the periodic inspections of the manufacture's sign shop. The aluminum sign panel shall have a square punched hole to receive a carriage bolt or a lock washer for use with a carriage bolt and tamper proof nut. Hardware for mounting aluminum panel signs shall comply with the requirements of this Section 450, Sign Structures and Hardware.

450.3.7 SIGN STRUCTURES AND HARDWARE

450.3.7.1 Steel posts and base posts for plywood or aluminum panel signs shall be of the dimensions and cross section shown on the plans. Steel posts and base posts shall either be finished by one of the following methods:

450.3.7.1.1 Hot dipped galvanized in accordance with the requirements of ASTM A 525 or ASTM A 123;

450.3.7.1.2 Hot dip galvanized zinc coating in accordance with the requirements of AASHTO M 120, followed by a chromate conversion coating and a cross-linked polyurethane acrylic exterior coating;

450.3.7.1.3 Painted with a green paint meeting the requirements of GSA 595-A, (Color No. 14109). Said green paint shall be a minimum of one (1) mil in thickness.

450.3.7.2 Hardware for post assembly shall be hot dipped galvanized or cadmium plated in accordance with ASTM A 165, stainless steel, or mechanically galvanized in accordance with ASTM B 545 (Class Fe/Sn 20). Post assembly hardware shall be of the dimensions shown on the plans.

450.3.8 BOLTS: Size 5/16 inch-18 UNC for sign attachment shall be a tamper proof carriage bolt, either hot dipped galvanized, cadmium plated in accordance with ASTM A 165, stainless steel, or mechanically galvanized in accordance with ASTM B 545 (Class Fe/Sn 20). Tamper resistant nuts, size 5/16 inch-18 UNC shall be used and fabricated from C1008 hot rolled steel, case hardened to R55-60, and plated with zinc yellow dichromate, 0.002 inch and 0.005 inch thick.

450.4 CONSTRUCTION REQUIREMENTS.

450.4.1 CERTIFICATION OF MANUFACTURER: The CONTRACTOR shall submit, in writing, the name of the proposed sign manufacturer, project number, and certification that all sign materials comply with the specifications.

450.4.2 SIGN IDENTIFICATION

450.4.2.1 The following identification labels shall be affixed to all signs and shall include the information as listed:

450.4.2.1.1 MANUFACTURING IDENTIFICATION LABELS: These labels shall include the wording: "Manufactured By", the initials of the sign fabricator, the month and year of fabrication, the initials of the reflective sheeting manufacturer and the wording "Theft is a Crime";

450.4.2.1.2 CONTRACTORS IDENTIFICATION LABEL: This label shall include the CONTRACTOR's Name, Date Installed, Month and Year.

450.4.2.2 The above labels may be either die stamped in 3/8 inch letters and numerals, or made with high-tack adhesive sign sheeting (reflective or non-reflective) prepared with screened ink in 1/2 inch letters and numerals.

450.4.2.3 The labels shall be placed on the lower back side of the sign, and located so as not to fall behind any post or frame member. Die stamping shall be performed in a manner that will not damage the finished sign. The label shall have similar weather resistance characteristics as the sheeting and shall last for at least the expected service life of the sign. The labels shall be affixed at the time the sign is manufactured.

450.4.3 APPROVAL OF SHOP DRAWINGS.

450.4.3.1 Standard signs shall be constructed in accordance with the detail drawing furnished to the CONTRACTOR by the City of Albuquerque. The CONTRACTOR shall submit detailed shop drawings of all special code signs (those other than the standard MUTCD coded signs) to the ENGINEER and the Traffic Engineer for approval. The CONTRACTOR shall not begin fabrication of special coded signs until the shop drawings are approved by the ENGINEER and the Traffic Engineer. These drawings shall show the complete legend, arrangement of letters and numerals, letter and numeral height, letter series, symbols, borders and dimensions.

450.4.3.2 The CONTRACTOR shall not erect the signs until the shop drawings are approved.

450.4.3.3 The CONTRACTOR must verify the post lengths with the ENGINEER and the Traffic Engineer before installation operations are started.

450.4.4 INSPECTION

450.4.4.1 All material and finished signs shall be subject to inspection and release or installation by the ENGINEER and the Traffic Engineer at the Project site prior to installation, and shall be subject to final inspection at the project after installation. The entire sign may be rejected if there are mars, damages, stains, discolorations, or defacements resulting from fabrication, storage, shipment or installation.

450.4.4.2 The ENGINEER and the Traffic Engineer shall at all times during work hours, have free entry to the parts of the sign manufacturing plant that are involved in the

manufacture and production of signs. Adequate facilities required for inspection shall be furnished without charge to the ENGINEER and the Traffic Engineer for inspection of signs and to verify the manufacturer's Q.C. Program.

450.4.4.3 Test panels, twelve (12) inches by twelve (12) inches representative of each state of production, shall be furnished on request, to the ENGINEER and the Traffic Engineer. These panels shall be processed along with regular production run and witnessed by the ENGINEER and the Traffic Engineer. Should there be any question as to validity of a test panel, a completed sign shall be furnished upon request. Signs not conforming in all respects to the requirements of these specifications may be rejected and the manufacturer's Q.C. Program may be withdrawn. The ENGINEER may select a sign at random for submittal to Traffic Engineering Operations Division for further inspection. The ENGINEER will return the sign to the CONTRACTOR in time for the sign to be installed in accordance with the CONTRACTOR's schedule.

450.4.5 PACKAGING AND SHIPPING: All signs shall be suitably packaged and protected for proper shipment and storage. Signs shall be delivered undamaged to the project site.

450.4.6 FABRICATION

450.4.6.1 Material ½ inch thick or less may be sheared, blanked, sawed, or milled. Material over ½ inch thick shall be sawed or milled. Cut edges shall be true and smooth and free from excessive burrs or ragged breaks. Re-entrant cuts shall be filleted by drilling prior to cutting. Unless the plans show otherwise, flame cutting will not be permitted.

450.4.6.2 Bolt holes shall be drilled to finish sizes.

450.4.6.3 Steel surfaces to be in contact with aluminum shall be galvanized or of stainless steel.

450.4.6.4 Aluminum surfaces to be in contact with concrete or earth shall be given a heavy coat of an alkali-resistant bituminous paint.

450.4.7 INSTALLATION AND REMOVAL OF SIGNS: The CONTRACTOR shall erect traffic sign structures at locations shown on the plans. Existing traffic control signs removed by the CONTRACTOR shall be delivered to locations designated by the ENGINEER. The CONTRACTOR shall verify the sign locations with the ENGINEER prior to their installations.

450.4.8 USE OF CERTIFIED SIGNS ONLY: The CONTRACTOR's sign manufacturer must supply signs with

an identification on the back of the sign as specified in this Section 450 which matches the approved sign manufacturer identified on the documentation letter. The CONTRACTOR shall not install permanent signs until the ENGINEER has verified that the shipment of signs delivered has a manufacturer's check list and has given the CONTRACTOR authorization to begin sign installations. The CONTRACTOR must use the manufacturer for which certification was requested.

450.4.9 SIGN STORAGE: The CONTRACTOR shall store material, including posts, under a roof or otherwise covered for protection against the elements. Materials shall be stored so as not to be on the ground or come in contact with surface runoff water.

450.4.10 REMOVING AND RESETTING PLYWOOD OR ALUMINUM PANEL SIGNS: The CONTRACTOR shall remove existing designated plywood or aluminum panel signs, sign posts, and base posts and stockpile sign posts and base posts at locations designated by the ENGINEER, or as shown in the plans. Removed plywood or aluminum panel signs shall be reset on new steel sign posts and base posts in compliance with this Section 450 and details shown on the plans.

450.4.11 SCHEDULE: A written schedule for the removal and resetting of existing traffic signs shall be submitted to the ENGINEER for approval prior to commencement of sign removal.

450.5 MEASUREMENT AND PAYMENT.

450.5.1 Steel posts and base or anchor posts for plywood or aluminum panel signs will be measured per each post, complete in place.

450.5.2 Plywood or aluminum panel signs will be measured by the square foot of sign face area mounted on drive-down posts, complete in place.

450.5.3 Removing and resetting of plywood or aluminum panel signs and signs will be measured by the unit, complete in place.

450.5.4 The accepted quantities of traffic signs and sign structures will be paid for at the contract price per unit of measurement for each of the pay items listed as shown on the bid proposal.